

DATE 5/9/83

## SSC Service Bulletin

no. 83-305

TO: ALL REGENCY COMMUNICATIONS PROFESSIONAL SALES AND SERVICE CENTERS  
ALL REGENCY COMMUNICATIONS PROFESSIONAL SALES REPRESENTATIVES

MODELS AFFECTED: MCU-31, MCU-315A, MCU-34 - MAIN BOARD 704-121 ONLY  
UHF-FM MOBILE TRANSCEIVERS

SYMPTOM: TRANSMITTER UNSTABLE; POOR TRANSMITTER CONDUCTED  
SPURIOUS EMISSIONS.

### PRODUCTION CHANGES:

1. Beginning in April 1983, the following changes have been made to improve transmitter stability:

#### A. Main Board Changes

1. Change C355 from .01mF, P/N 1538-0103-804 to .1mF X7R, P/N 1539-0104-706.
2. Change R337 from 330, P/N 4700-0331-042 to 220 comp, P/N 4700-0221-042.

#### B. Power Amplifier Changes, Rev. G or later only

1. Change R109 from 100, P/N 4700-0101-042 to 47 comp, P/N 4700-0470-042.
2. Add C123 .01mF - leads are cut to 3/4" length and with 1/2" variglass sleeve, P/N 3101-0000-023, on each lead. C123 is topside soldered as shown.

#### C. Control Board Schematic - components of SW401A are changed:

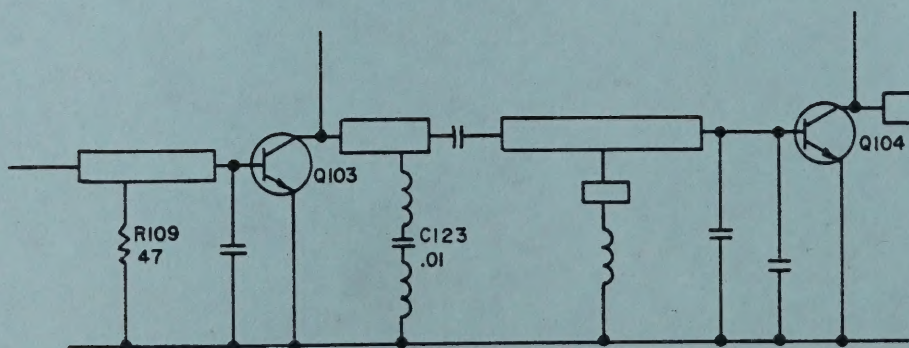
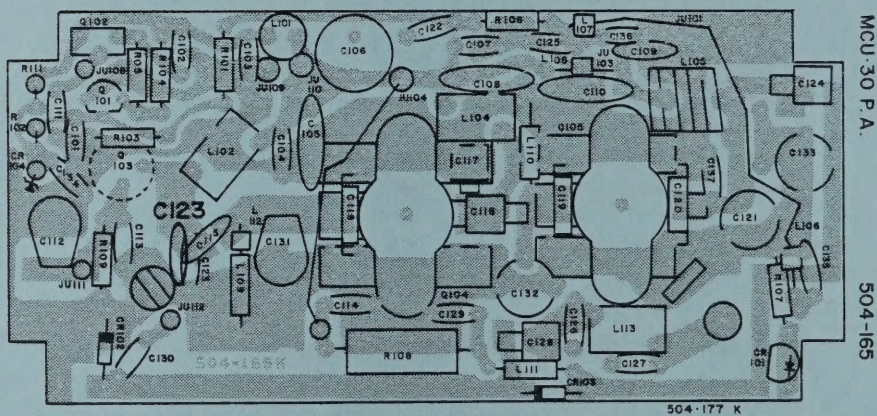
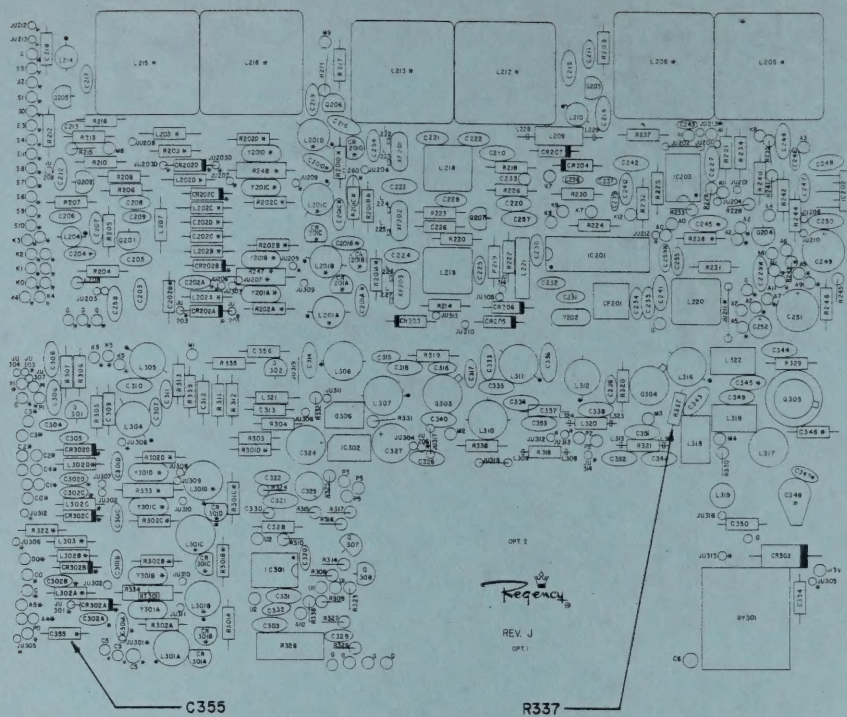
R412 to R415, R413 to R414, R414 to R413, R415 to R412.

2. The transmitter tuning procedure has been revised.

(See attachments)

TECHNICAL SERVICE DEPARTMENT  
REGENCY COMMUNICATIONS, INC.







3  
TP-15-154  
DWG. NO.

## II. TRANSMITTER SET-UP INSTRUCTIONS

A. Determine main board number. The number appears on the solder side of the board just below the Regency logo. The board number is important only for tuning the exciter for maximum output power.

1. If board 1700-7404-200:

- Follow set-up instructions B,C,D,E,F and G.
- Preset C346 and C349 for minimum capacitance. Preset C351 and C355 at half maximum capacitance. Preset C358 for maximum capacitance (see Fig. 2).
- Follow the transmitter tune-up instructions of III.

2. If board 704-064 or 704-121:

- Follow set-up instructions B,C,D,E,F, and G.
- Preset C348 for maximum capacitance (see Fig. 2). When retuning a transmitter on a new frequency leave C348 in its tuned position until Step B.1.
- Follow the transmitter tune-up instructions of IV.

B. Insert tune-up crystal in F1 position. The tune-up crystal is selected as follows:

Freq. Range	450-475 MHz	475-512 MHz
Frequency	462 MHz	492 MHz

C. Insert external power connector and set power supply (3) to 13.6 VDC as indicated on VOM (4).

D. Connect wattmeter, 30 dB attenuator (8), band reject filter (14) and spectrum analyzer (9) to antenna connector.

E. Insert external PTT connector (15).

F. On 4 channel models, set frequency selector to F1.

G. Turn on the radio with the ON/OFF volume switch.

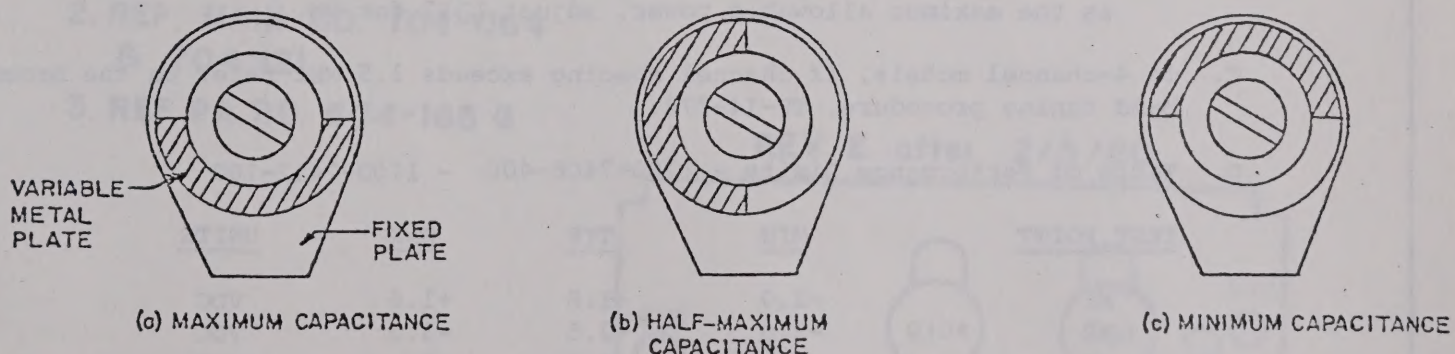


FIGURE 2

DRAWN

DATE

SIZE

PART NUMBER

DATE

TP-14-154

REV.



REV. 6  
SH. 6  
TP-14-134  
DWG. NO.

#### IV. TRANSMITTER TUNING PROCEDURE FOR MAIN BOARD - 704-064 or 704-121

A. VTVM Metering - Metering point M1 must be referenced to ground, but metering points M2 through M4 may be referenced to ground or to 13.6V. Key transmitter with external PTT and key only when measuring or tuning.

1. Monitor M1. Tune L304 and L305 for minimum positive voltage. When tuned the M1 voltage should drop 0.2-0.3 VDC compared with no crystal installed. A reading of 2.1V indicates oscillator; Q301, is not oscillating.

The following metering points will be described referenced to 13.6 VDC. The VTVM is set in the -DCV position and all test points are peaked. To reference to ground, set the VTVM in the -DCV position and dip all test points. Either way the voltage difference between tuned and not tuned will be identical.

2. Monitor M2. Alternately tune L306 and L307 for maximum negative voltage; -3.2V is typical. Tune L310 for a dip; -2.8V is typical. A reading of 0V indicates Q303 stage has not output.
3. Monitor M3. First tune L312 for maximum negative voltage; then tune L311; -5V is typical. Tune L316 for a dip; -4V is typical. A reading of 0V indicates Q304 stage has not output.
4. Monitor M4. First tune L317 for maximum negative voltage; then tune L316 for maximum negative voltage. Voltage should read -1.2 typically. A reading of 0V indicates Q305 stage has no output.

#### B. Tuning Adjustments While Monitoring Power Output

1. In the MCU-30 tune in the listed order; C348 on the main board, then C112, C131, C132, C121, and C133 on the power amplifier for maximum power out as measured on the Wattmeter (8). Power should exceed 35W. C121 should never be left in the maximum capacitance position. Current delivered to the transceiver from the power supply (3) should be less than 13A.
2. In the MCU-15 tune C348 on the main board, then C112, C131, and C133 on the power amplifier for maximum power out. Power should exceed 15W and the current from the power supply should be less than 7A.
3. In the MCU-03 tune C348 on the main board and then C112 and C132 on the power amplifier for maximum power out. Power should exceed 2 watts and the current drawn from power supply should be less than 2A. Where 2W is the maximum allowable power, adjust L317 for 2W.

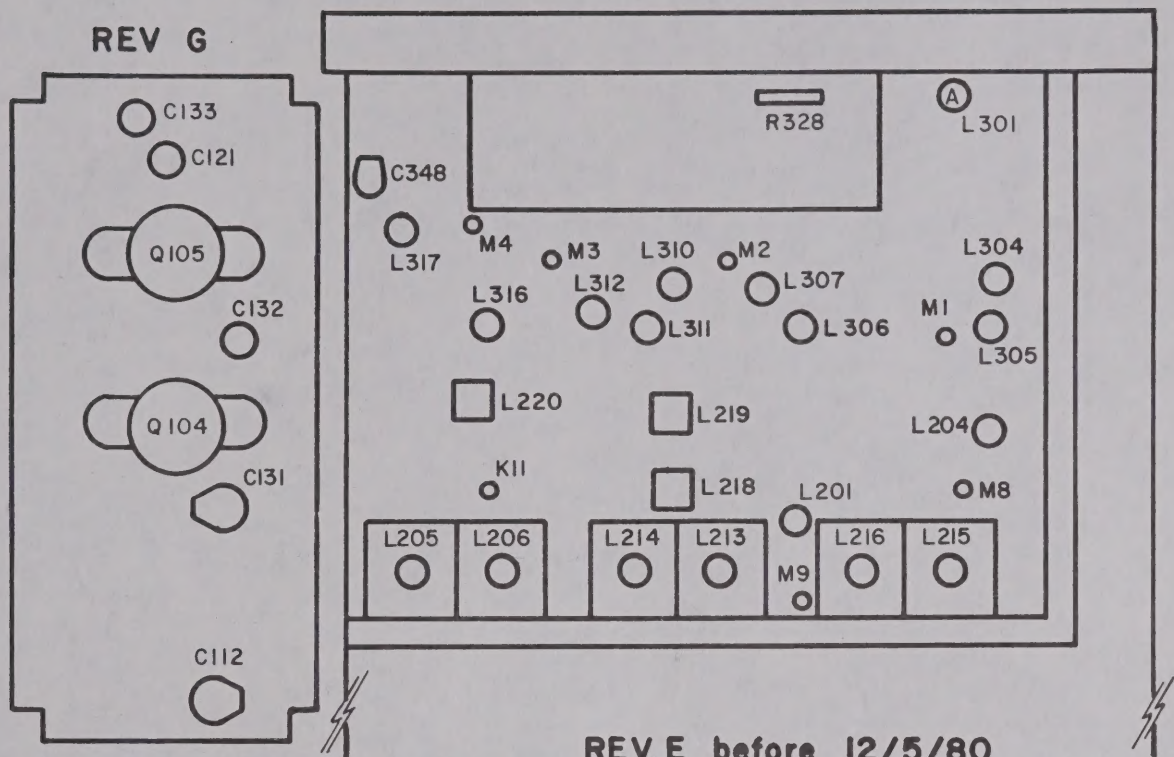
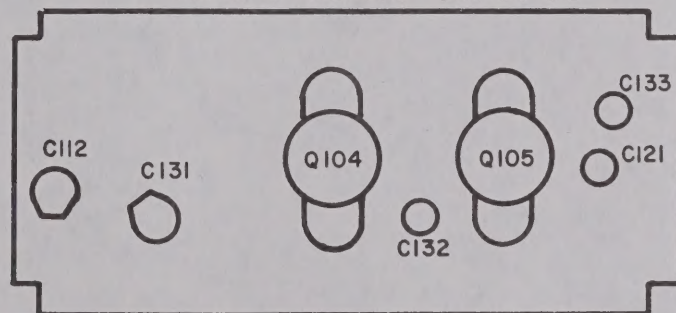
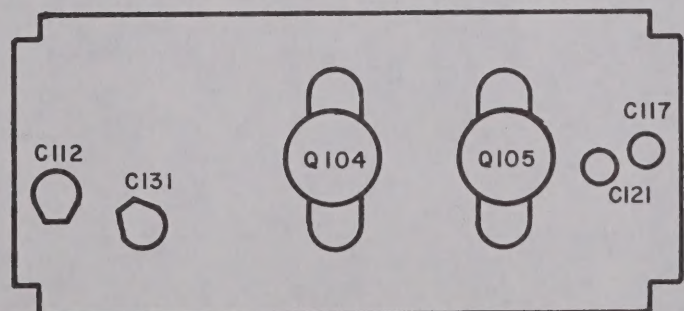
C. On 4-channel models, if channel spacing exceeds 1.5 MHz refer to the broad-band tuning procedure, TP-14-272.

D. Table of Performance Limits - 1700-7406-400 - 1700-7412-100

TEST POINT	MIN	TYP	MAX	UNITS
M1	+2.0	+1.8	+1.6	VDC
M2	-2.0	-2.5	-3.5	VDC
M3	-3.0	-3.5	-5	VDC
M4	-1.0	-1.5	-2	VDC

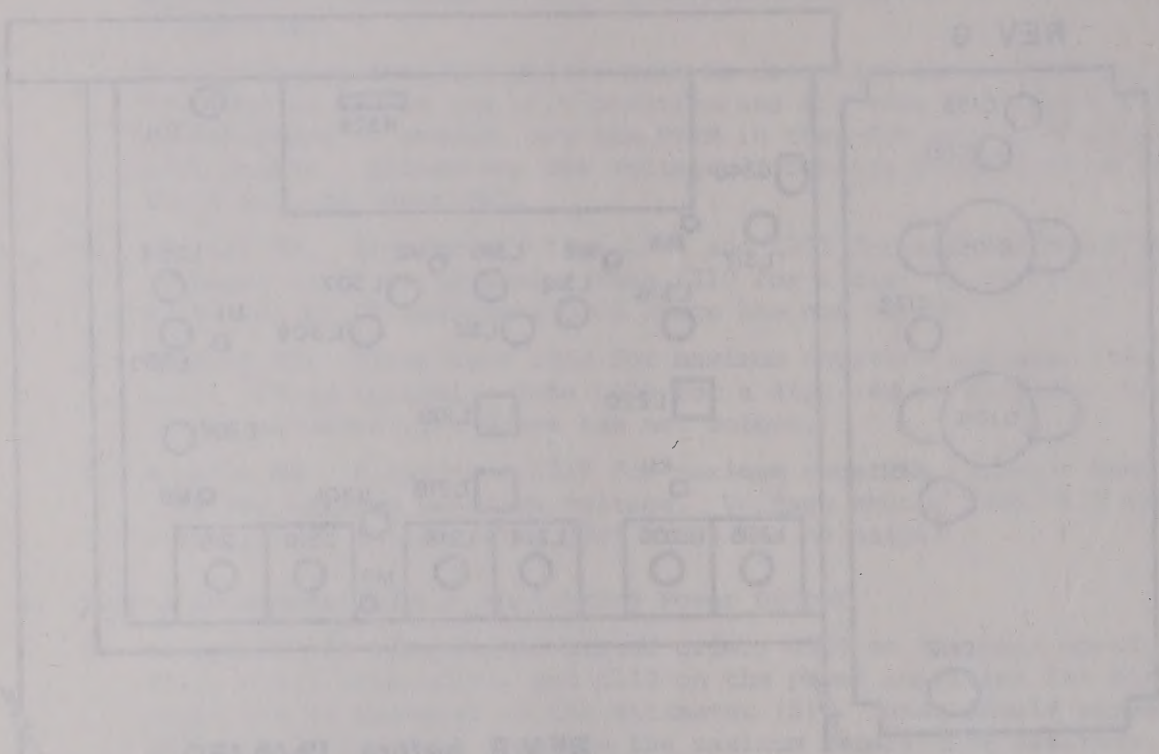
DRAWN	am	DATE	4/27/83	SIZE	A	PART NUMBER	TP-14-154	REV.	F
APPROVED		DATE		SCALE				SHEET	6
DO NOT SCALE DWG.									



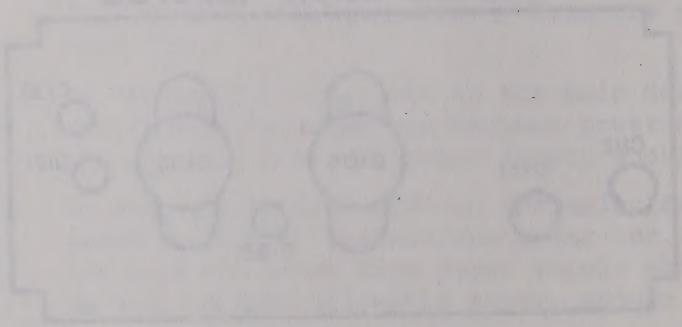
**REV. E before 12/5/80****REV. E after 2/5/80****NOTES.**

1. REFER TO PARTS PLACEMENT DWG FOR TUNING POINT LOCATIONS.
2. REF. MAIN BD. 704-064 & 704-121
3. REF PA. BD. 504-165 G

REV 0

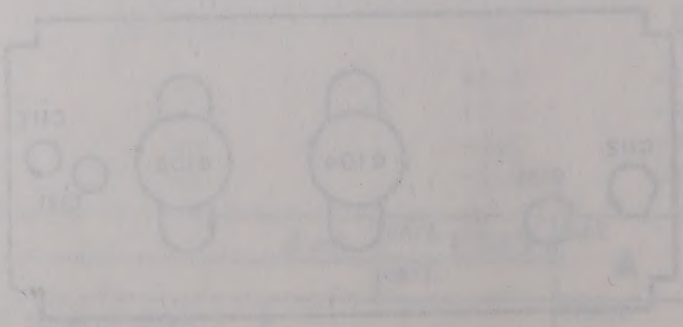


REV 0



NOTE:  
1. REFER TO PARTS  
2. PLACEMENT OF  
3. FOR TURNING POINT  
LOCATIONS

REV 0



ITEM	QTY	UNIT
1.00	1.00	1.00
2.00	1.00	1.00
3.00	1.00	1.00
4.00	1.00	1.00
5.00	1.00	1.00
6.00	1.00	1.00
7.00	1.00	1.00
8.00	1.00	1.00
9.00	1.00	1.00
10.00	1.00	1.00